ON SOME PYCNOGONIDS FROM THE SEA AROUND KII PENINSULA*

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With 2 Text-figures

The Pycnogonida occurring around the coast of Kii Peninsula have been scarcely examined. So far as I am aware, only two species, *Lecythorhynchus hilgendorfi* and *Ammothea (Ammothella) bi-unguiculata*, both found living commensally with sea-cucumbers, have ever been reported by OHSHIMA (1927 a, b) from Seto. Very recently, HEDGPETH (1949) recorded eight species collected by the Albatross Expedition in 1900 and 1906 from deep waters of Kii area. The present account is based upon a small collection deposited in the museum of the Seto Marine Biological Laboratory. The great majority were secured by Mr. S. SAKAGUCHI from bottom materials dredged at 100 to 200 meters depth off Minabe, not far from the Laboratory, but a few of the specimens were collected by myself and other members of the Laboratory in the neighborhood of Seto, where the Laboratory is located (UTINOMI, 1950).

In all, ten species belonging to six genera, of which two seem to represent new species, have been examined. Most of the more detailed information together with measurements of species and ecological notes will be left for a future more comprehensive paper. Here follows a preliminary list of the species seen by myself at Seto from inshore waters:

Nymphon japonicum ORTMANN
Pallenopsis tydemani LOMAN
P. virgatus LOMAN
Achelia superba (LOMAN)
A. kiiensis n. sp.
A. ohshimai n. sp.
Ascorhynchus japonicus IVES
A. glabroides ORTMANN
Lecythorhynchus hilgendorfi BÖHM
Colossendeis dofleini LOMAN

Before going further, I should like to extend my hearty thanks to Dr. Hiroshi OHSHIMA, M.J.A. for his kind advice and for reading the manuscript.

Family NYMPHONIDAE

1. *Nymphon japonicum* ORTMANN

Nymphon japonicum ORTMANN 1891, pp. 158-159; LOMAN, 1911, p. 8; OHSHIMA,

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1936, p. 862; HEDGPETH, 1949, pp. 249-250.

Material. Off Minabe, 100-200 m deep. 59 specimens. March, 1944.

HEDGPETH (1949) has shown that *Nymphon japonicum*, figured by OHSHIMA and KISHIDA (1947) in the "Illustrated Encyclopedia of the Fauna of Japan", p. 1007, does not agree exactly with the original figure by ORTMANN but probably referable to his *N. micropedes*. Most of the material at hand also indicate the subequal length between the tarsus and propodus which is characteristic of this species. The body is elongate, about 10-15 mm in length, including proboscis, and the walking legs are very slender and more elongate, about 40 to 55 mm long.

This is a very common deep water species found in Japan, ranging from Tsugaru Strait to the South of Kagoshima Bay.

Family PALLENIDAE

2. *Pallenopsis tydemani* LOMAN

Pallenopsis tydemani LOMAN, 1908, pp. 65-66; HEDGPETH, 1949, p. 277.

Material. Off Minabe, 100-200 m deep. 1 ovigerous male. March, 1944. Trunk 6 mm, proboscis 2.7 mm, abdomen 1 mm.

HEDGPETH first records this Malayan species from Japanese waters, namely Albatross Station 4908 (off Koshiki-zima, 434 fathoms).

3. *Pallenopsis virgatus* LOMAN

Pallenopsis virgatus LOMAN, 1908, pp. 69-70; HEDGPETH, 1949, pp. 277-278.

Material. Off Yuzaki, 25-35 m. deep. 1 male. 14 August, 1934.

Ever recorded from Siboga Station 310 (north of Sumbawa Is, 73 m) and from Albatross Station 3730 (SW of Omaé-saki, 34-37 fathoms).

This species is characterized by the presence of paired tubercles on the dorsal margin of the first coxa and by the strong auxiliary claws which are a little shorter than the terminal one on the propodus. Trunk 4 mm, proboscis 3 mm, abdomen 2 mm, third lateral process 1.5 mm, third leg 31.5 mm.

Family AMMOTHEIDAE

4. *Achelia superba* (LOMAN)

Ammothea superba LOMAN, 1911, pp. 11-12; OHSHIMA, 1936. p. 866.
Achelia superba HEDGPETH, 1949, p. 287.

Material. Three specimens, obtained from Tanabe Bay in May, 1937, have been lost by the earthquake of 1946. No data are thus available.

An endemic species recorded from Sagami Bay, Tokyo Bay and E. of Sagalien, occurring from 80 to 180 m in depth. I have not ever collected from the shore along Tanabe Bay.

5. *Achelia kiiensis* nov. sp.

(Fig. 1)

Material. A single male (holotype). Tanabe Bay, 5-10 m deep. 15 April, 1938, taken by a beach seine.

Description. Trunk short, oval in outline or disk-shaped, unsegmented. Lateral processes contiguous throughout their length, each tipped with a pair of laterodorsal tubercles and a longer posterolateral tubercle, each of which bears a few short stiff bristles at the apex. Cephalic segment without neck, widened anteriorly and ending on each side in a large protuberance tipped with a bristle, like lateral process. Besides, there are two or three smaller tubercles bearing a bristle between eye tubercle and frontolateral protuberances. Eye tubercle situated close to frontal edge, moderately high, bluntly pointed, with four well-marked eyes near summit. Dorsal surface of main trunk slightly swollen and smooth; integument granular, deep brown in colour.

Abdomen long, slender, slightly swollen distally, quite reaching to distal end of first coxal segment of last legs, but slightly bent upward. It is armed near tip with a few spines.

Proboscis heavy, broadly oval, a little longer than trunk.

Chelifore about one-third as long as proboscis, 2-jointed; chela almost round, about one-fifth as long as scape or basal segment; both segments bear each a short spine distally.

Palpus 8-jointed; first two segments longer than chelifore, second and fourth subequal, about four times as long as first one, fifth to eighth all very short, subequal, and thickly clothed with bristles.

Oviger rather heavy, 9-jointed; first segment stout, not much longer than wide; second and third subequal in length but a little longer than first; fourth and fifth slender, subequal in length, about three to four times as long as wide, subtriangular in outline, with a strong reversed spine at base; seventh and eighth armed each with a tuft of long bristles at dorsal distal corner and also ventrally with a denticulate spine, the former segment longer and wider than the latter; terminal ninth smaller than preceding, armed ventrally with three heavy denticulate spines, but no bristle.

Legs long, almost uniform in length, rather stout, knobby, covered with scattered spines, terminating in well-developed claw and pair of strong auxiliary

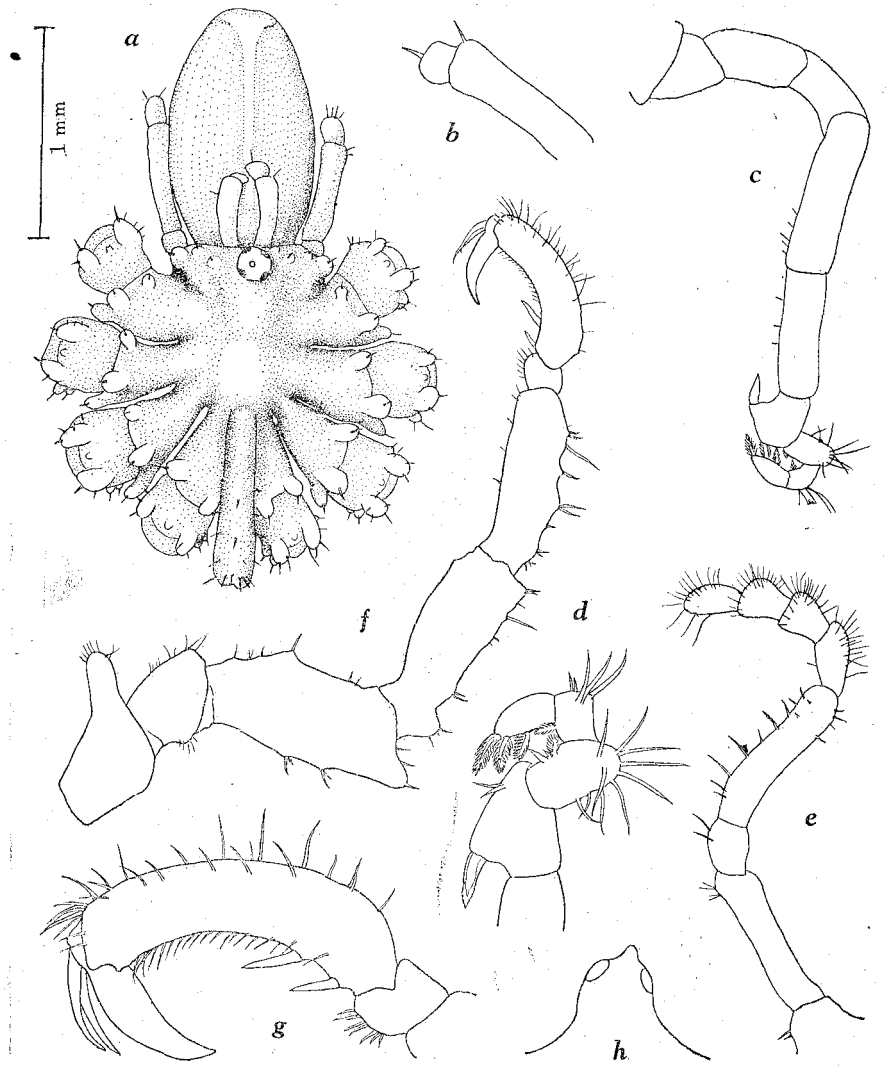

Fig. 1. *Achelia kiiensis*, n. sp. (♂) *a*, Dorsal view of holotype, ×27, *b*, chelifore, ×53; *c*, oviger, ×33; *d*, terminal joints of oviger, ×63; *e*, palpus, ×33; *f*, third leg, ×27; *g*, tarsus and propodus ×53; *h*, eye tubercle, ×53.

claws. Coxa I armed dorsally with a pair of large round tubercles bearing a few short bristles, and posterolaterally with one or two smaller tubercles, as in lateral processes, and also armed dorsomedially with a nude, minute tubercle between these distal tubercles; coxa II armed with lateral tubercles but no paired dorsal tubercles; coxa III as long as wide, armed on both sides with several bristles; femur about twice as long as wide, heavy, armed distally with a strong protuberance; tibia I and II subequal in length, a little shorter than

femur, armed dorsally with several short or long spines; tarsus very short, armed ventrally with short spines; propodus stout, curved ventrally, armed dorsally with a row of long spines, ventrally in proximal part with two widely-separated heavy spines, distally with numerous small spines; terminal claw very strong, curved; auxiliary claws slender but over half as long as claw. Genital aperture of male occurs on long protuberance on ventral distal margin of second coxae of two posterior legs, the protuberance being about as long as the width of coxal segment.

Measurement in mm.		Third leg:	
Proboscis	1.36	Coxa I	0.35
Trunk, length	1.0	Coxa II	0.48
Trunk, width (incl. 2nd lateral proc.)	1.6	Coxa III	0.44
Abdomen	0.9	Femur	1.1
Chelifore	0.4	Tibia I	1.0
Eye tubercle	0.2	Tibia II	0.9
		Tarsus	0.2
		Propodus	0.8
		Terminal claw	0.44

Remarks. This species seems to be closely akin to *Achelia superba* (LOMAN), *A. alaskensis* (COLE) and *A. echinata* (HODGE) in the arrangement of tubercles on the lateral processes and coxae of legs, but differs from them in its minor details and in having 5 denticulate spines and a simple reversed spine on the oviger. As to the latter feature, it agrees well with *A. bituberculata* HEDGPETH from Misaki, but differs notably in lacking dorsal trunk tubercles. The propodus, having 2 large spines on the heel, is also characteristic.

6. *Achelia ohshimai* nov. sp.

(Fig. 2)

Material. A single female (holotype). Hatake-zima in Tanabe Bay, under stones between tidal marks. 14 July, 1950, collected by Mr. I. YAMAZI.

Description. Trunk disk-shaped, unsegmented, lateral processes contiguous. Cephalic segment widened anteriorly, exceedingly raised with eye tubercle from the rest, and provided anteriorly with a small tubercle between eye tubercle and large frontolateral tubercle on each side. Eye tubercle tall, with four elongate eyes in the middle. Abdomen fingerlike, nearly reaching to distal end of second coxae of last legs; it is armed on the dorsal surface with three spiny processes, a strong one basally, a small medially and a slight almost distally. So the back of main trunk between eye tubercle and abdomen is

deeply sunken, showing somewhat a saddle-shaped appearance.

Lateral process armed distally with a pair of dorsal tubercles, of which the posterior one is invariably larger than the anterior, and usually bears a bristle at the tip. Each of anterior two processes also armed with a small posterolateral tubercle.

Proboscis very broad, pyriform, longer than trunk.

Chelifore short, about one-third as long as proboscis, 2-jointed, with a globular subchela; scape about three times as long as chela with a strong spiny process at apex and a little smaller one at middle.

Palpus hook-like, longer than proboscis, the four terminal segments thickly clothed with bristles.

Oviger short, slender, 10-jointed; first to third segments subequal in length, fourth and fifth subequal in length but slightly longer than the preceding one, sixth a little shorter than fifth, simple, without reversed spine, four terminal segments from seventh to tenth simply curved like a hook, armed ventrally with denticulate spines, 2 on the seventh, 1 on the eighth, 1 on the ninth, and 2 on the tenth.

Legs almost uniform in length, not much knobby, with a few scattered spines. Coxa I armed dorsally with a pair of tubercles as in lateral processes, and a smaller posterolateral tubercle on the anterior two legs only; coxa II nude, without distinct genital process; coxa III slightly shorter than coxa II; femur about twice as long as wide, armed distally with a short protuberance; tibia I and II subequal in length, a little shorter than femur; tarsus very short; propodus curved, with three large spines on heel. Terminal claw very strong, curved, half as long as propodus; auxiliary claws rather strong, but usually more than half as long as terminal claw.

Measurements in mm.		Fourth leg:	
Proboscis	1.1	Coxa I	0.39
Trunk	0.8	Coxa II	0.39
Abdomen	0.7	Coxa III	0.33
Chelifore	0.4	Femur	1.0
Oviger	about 1.5	Tibia I	0.8
		Tibia II	0.9
		Tarsus	0.15
		Propodus	0.8
		Terminal claw	0.44

Remarks. This species resembles the preceding *A. kiiensis* (n. sp.), but differs from it in the saddle-shaped back of the trunk together with the peculiar adornment of the abdomen and chelifore. It is further distinguished by

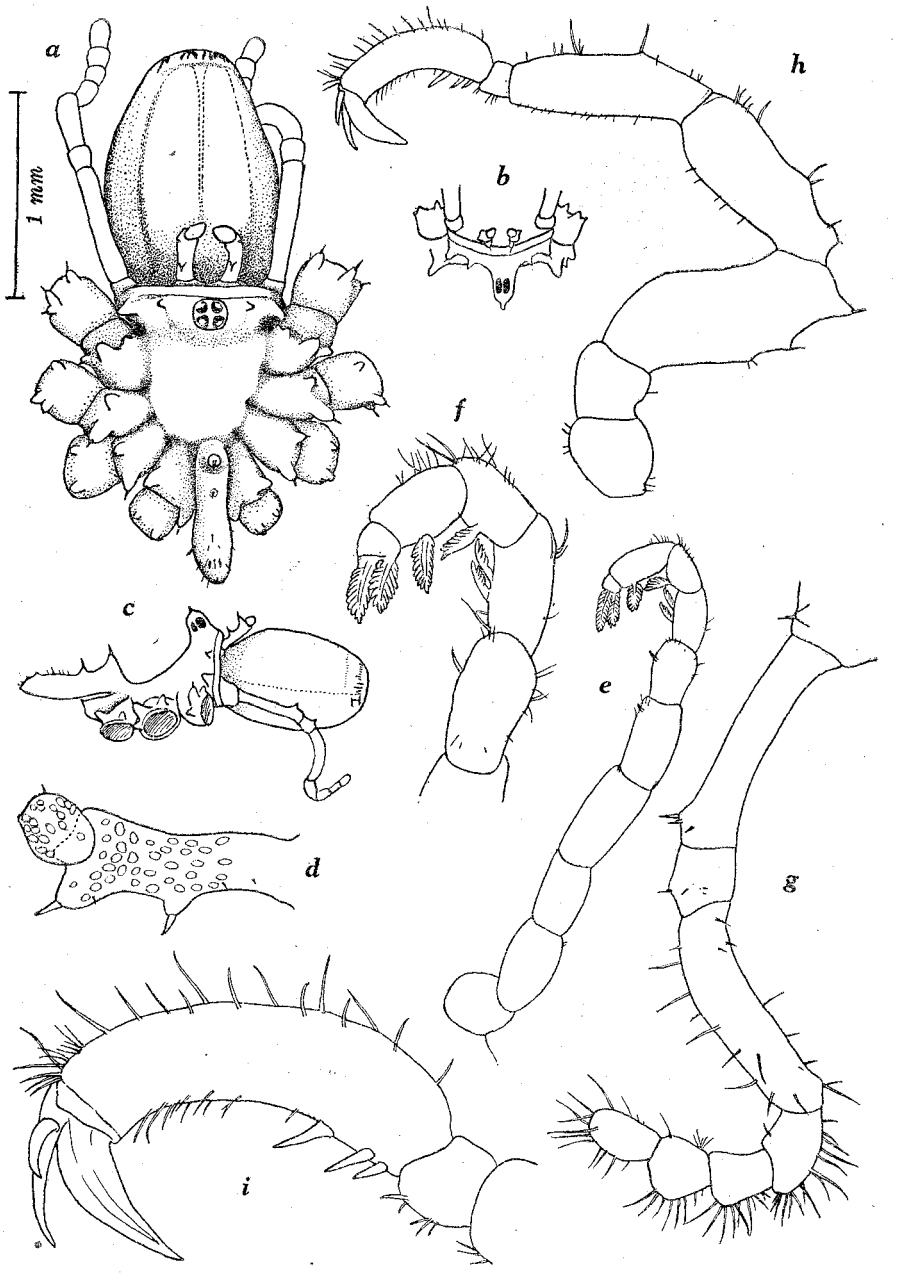

Fig. 2. *Achelia ohshimai*, n. sp. (♀) *a*, Dorsal view of holotype, ×27; *b*, frontal view of anterior region; *c*, lateral view; *d*, chelifore, ×80; *e*, oviger, ×53; *f*, terminal joints of oviger, ×96; *g*, palpus, ×53; *h*, fourth leg, ×27; *i*, tarsus and propodus, ×67.

the number and arrangement of denticulate spines on the oviger.

This species is dedicated to Dr. Hiroshi OHSHIMA in recognition of his excellent work with Japanese pycnogonids.

7. *Ascorhynchus japonicus* IVES

Ascorhynchus japonicus IVES, 1892, pp. 219-221; LOMAN, 1911, p. 5; OHSHIMA, 1936, p. 865; HEDGPETH, 1949, pp. 292-293.

Material. Off Minabe, 100-200 m deep. 2 males. March, 1944.

Of this handsome pycnogonid, two large males are examined. One of them measures: Proboscis 17 mm, trunk 35 mm, abdomen 4.5 mm, chelifore 4.5 mm, oviger 32 mm and 2nd legs 80 mm.

This species has been often found from the southeast area of Honsyū, chiefly from Kii to Sagami Bay. Recently HEDGPETH recorded also from the northeast of Hokkaido. It occurs in deep waters, ranging from 50 to 918 fathoms. Although HEDGPETH (1949, p. 293) says that "All previous collections appear to have been made in shallow water", there is no evidence to prove its occurrence in shallow waters.

8. *Ascorhynchus glabroides* ORTMANN

Ascorhynchus glabroides ORTMANN, 1891, pp. 160-161; LOMAN, 1911, p. 7; OHSHIMA, 1936, p. 865; HEDGPETH, 1949, p. 293.

Material. Off Minabe, 100-200 m deep. 1 male. March, 1944.

This species is smaller than the above-mentioned *As. japonicus*. A single male represented in the collection measures: Proboscis 5 mm, trunk 9 mm, abdomen 1.8 mm, and 2nd legs 20 mm.

This is known from Kagoshima Bay, 40-50 fathoms, Sagami Bay and from SW. of Gotō Islands, 139 fathoms.

9. *Lecythorhynchus hilgendorfi* BÖHM

Corniger hilgendorfi BÖHM, 1879a, pp. 187-189.

Lecythorhynchus hilgendorfi BÖHM, 1879b, pp. 140-141; LOMAN, 1911, pp. 8-9; OHSHIMA, 1927a, pp. 610-611; OHSHIMA, 1927b, pp. 380-385; OHSHIMA, 1936, p. 867; HEDGPETH, 1949, p. 296.

Material. Many females and males collected from shore along the coast of Kii from Kada to Kushimoto.

This is a typical littoral species occurring commonly around the coast of Japan, ranging from Akkeshi Bay, Hokkaido (OKUDA, 1934) to Tomioka, Kyūsyū (OHSHIMA, 1936). In the neighborhood of Seto it is sometimes found under

stones or on corallines. OHSHIMA (1927a, b) notes that his specimens have been found living on the body of a holothurian, *Holothuria lubrica* var. *moebii* (LUDWIG) at Seto. But such an instance is rather rare in my field observation.

Family COLOSSENDEIDAE

10. *Colossendeis dofleini* LOMAN

Colossendeis dofleini LOMAN, 1911, pp. 4-5; OHSHIMA, 1936, p. 867; HEDGPETH, 1949, p. 300.

Material. Off Minabe, 100-200 m deep. 1 male. March, 1944.

An imperfect specimen is examined; of the appendages, a leg, a palpus and two ovigers are only remained. But it is easily identifiable with this species. Its measurements follow: Trunk 4 mm and proboscis 5.5 mm.

A widely distributed species ranging from east of Kuriles to Ensyū-nada, south of Honsyū; bathymetrical range 229-505 fathoms (after Albatross records).

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